AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough; and 2. added matter is shown by underlining.

Claims 1-28 (Cancelled).

Please add new claims 29-56 as follows:

29. (New) A cell structure for identification of substances in flowing sample gas, based on ion mobility, wherein the cell structure has a flow channel for controlling the gas flow, a reference cell arranged to form a reference signal, a ionisation section for achieving an ionisation effect into the sample gas, and an analysis cell arranged to form an analysis signal so that the reference cell, the ionisation section, and the analysis cell are located in said order in the direction of the flow of the sample gas in the flow channel.

30. (New) A cell structure according to claim 29, wherein it also has a front cell before the reference cell, and/or a back cell after the analysis cell, in the gas flow direction.

31. (New) A cell structure according to claim 29, wherein it has a reference cell with an electrode structure that is substantially similar to the electrode structure in the analysis cell.

32. (New) A cell structure according to claim 29, wherein it has in a cell an electrode pair with the first electrode and the second electrode.

33. (New) A cell structure according to claim 32, wherein at least one electrode is bipartite so that it has a first electrode part and a second electrode part.

34. (New) A cell structure according to claim 33, wherein said first electrode part is arranged to provide such a first electric field that has a repeated peak value, direction and/or frequency.

35. (New) A cell structure according to claim 34, wherein, that a second electrode part is arranged to provide such a second electric field that is different from said first electric field.

36. (New) A cell structure according to claim 29, wherein it has a divider plate in the flow channel for dividing the flow channel in to two parts parallel with it, the parts being a first part and a second part.

37. (New) A cell structure according to claim 36, wherein the ionisation section is in the first part of the flow channel for limiting the ionisation effect into a volume part in said part of the flow channel.

38. (New) A cell structure according to claim 36, wherein, there is a part of a divider plate between a first electrode and a second electrode.

39. (New) A gas measuring device for identifying substances in flowing gas, based on ion mobility, wherein it has a cell structure comprising a flow channel for controlling a gas flow, a reference cell arranged to form a reference signal, a ionisation section for achieving the ionisation effect into the sample gas, and an analysis cell arranged to form an analysis signal so that the reference cell, the ionisation section, and the analysis cell are located in said order in the direction of flow of the sample gas in the flow channel.

40. (New) A gas measuring device according to claim 39, wherein it has signal processing means for generating and/or forming a third signal on the basis of said reference signal and analysis signal.

41. (New) A gas measuring device according to claim 40, wherein the reference cell and/or analysis cell has means for determining a property of the carrier gas so that said property of the carrier gas is at least one of the following:

(a) a local dose rate, received into a certain volume of gas, caused by a radiation field originating to a radio nuclide;

(b) gas humidity;

(c) gas temperature;

(d) gas composition;

(e) gas viscosity;

(f) gas density;

(g) mass-absorption coefficient of the gas for radiation.

42. (New) A gas measuring device according to claim 40, wherein it has, for determination of the gas flow, such a cell structure comprising a back field electrode pair and in such a first back field electrode and a second back field electrode.

43. (New) A gas measuring device according to claim 40, wherein it has, for collecting ions and/or particles from the gas flow, a cell structure comprising a front field electrode pair and in such, a first front field electrode and a second front field electrode.

44. (New) A gas measuring device according to claim 39, wherein it has transmitter-receiver means for maintaining and controlling the functions of the device by remote control.

45. (New) A gas measuring device according to claim 44, wherein said transmitter-receiver means are arranged to receive a impulse for controlling a part of the gas measuring device.

46. (New) A gas measuring device according to claim 44, wherein said transmitter-receiver means are arranged to communicate a certain analysis result, status data and/or control value between the gas measuring device and a device arranged to be communicating with the gas measuring device.

47. (New) A gas measuring device according to claim 39, wherein it has a microprocessor for maintaining and/or controlling the functions of the gas measuring device.

48. (New) A method for an identification of substances in flowing gas, based on electrical mobility of ions , wherein it has the following steps, in which

(a) a first electric field is set between electrodes in a reference electrode pair;

(b) a second electric field is set between electrodes in an analysis electrode pair;

(c) a gas sample is taken to be transported through the reference electrode pair, a ionisation section and the analysis electrode pair in said order;

(d) the gas sample is analysed;

(e) a mobility spectrum of ions is formed; and

(f) an ion is identified from the gas sample on the basis of the mobility spectrum.

49. (New) A method according to claim 48, wherein the step (d) has sub-steps, in which changes of charge on the electrodes in the reference electrode pair are observed for forming a reference signal, sample gas is charged for generating ions, and the changes of charge on the electrodes in the analysis electrode pair are observed for forming an analysis signal.

50. (New) A method according to claim 48, wherein in step (e), the mobility spectrum is formed on the basis of the reference signal and the analysis signal.

51. (New) A method according to claim 48, wherein it has a step, in which the gas sample is pre-processed for removing particulate solid and/or liquid material before the sample arrives at the reference electrode pair.

52. (New) A method according to claim 48, wherein in step (f), the identification is based on a mobility library or a respective database.

53. (New) A system for an identification of substances in ion form from flowing gas, on the basis of their electric mobility, wherein the system has a gas measuring device comprising a cell structure with a flow channel for controlling a gas flow, a reference cell arranged for forming a reference signal, an ionisation section arranged to achieve an ionisation effect to a

sample gas, and an analysis cell arranged for forming an analysis signal so that the reference cell, the ionisation section, and the analysis cell are located in said order in the direction of flow of the sample in the flow channel, and that the system further comprises a transmitter-receiver means for transmitting data between the gas measuring device and a radio terminal device.

54. (New) A system according to claim 53, wherein said cell structure further comprises a front cell and/or a back cell.

55. (New) A method for electrically determining the gas flow velocity in an aspiration condenser, wherein the method comprises the steps, in which, in an aspiration condenser,

(a1) a first electric field is set between electrodes in a first electrode pair comprising a first electrode;

(a2) a second electric field is set between electrodes in a second electrode pair, comprising a second electrode;

(a3) a third electric field is set between electrodes in a third electrode pair comprising a third electrode;

(a4) changes of charge of the first, second and third electrode in said first, second and third electric field are observed;

(a5) changes of charge detected, with the help of said second and third electrode, are corrected on the basis of the changes of charge detected on the first electrode;

(a6) time is determined, which passes between the occurrence of certain changes of charge on the second electrode and the occurrence on the third electrode;

(a7) the gas velocity is calculated.

56. (New) A method according to claim 55 for determining gas flow velocity, wherein in step (a6) an autocorrelation function is formed for determining the time between the detected changes of charge on the second and third electrode.